User Manual

MAN6787O Rev. 4.0 Nov. 2011

SKOPE PEGASUS

PG100/250/400/550HC-2

Horizontal Chiller - INTEGRAL

PG100HC-2

PG250HC-2

PG400HC-2

PG550HC-2

SKOPE Refrigeration

SKOPE PEGASUS Horizontal Chiller - Integral
PG100/250/400/550HC-2
User Manual

MAN6787O
Rev. 4.0 Nov. 2011

© 2007 SKOPE Industries Limited. All rights reserved.
SKOPE Industries Limited reserve the right to alter specifications without notice.

SKOPE® is a registered trademark of SKOPE Industries Limited.

SKOPE INDUSTRIES LIMITED
Head Office
PO Box 1091, Christchurch
New Zealand
Freephone: 0800 947 5673
Fax: (03) 983 3896
E-mail: enquiry@skope.co.nz
Website: www.skope.co.nz

Trademark Infringement

The SKOPE trademark on this product is infringed if the owner, for the time being, does any of the following:

- Applies the trade mark to the product after their state, condition, get-up or packaging has been altered in any manner
- Alters, removes (including part removal) or obliterates (including part obliteration) the trade mark on the product
- Applies any other trade mark to the product
- Adds to the product any written material that is likely to damage the reputation of the trade mark

Notice of the above contractual obligations passes to:

- Successors or assignees of the buyer
- Future owners of the product

CONTENTS

1 Installation

Safety First 4
Fitting the Legs or Castors 5
Adjustable Legs 5
Adjustable Castors 5
Castor Mounting Plates 5
Positioning the Cabinet 6
Location 6
Ventilation 6
Power Supply 6
Shelving. 7
Loading Product 7

2 Operation

Automatic Start-Up 8
Refrigeration Unit 8
Electronic Controller 8
Cabinet Lighting 8
HACCP 8
Electronic Controller 9
Controller Display 9
Controller Overview 10
Temperature Setpoint 10
Controller Alarms 11

3 Servicing

Lighting 12
Cabinet Interior Lights 12
Cleaning 13
Cabinet 13
Condenser Coil 13
Wiring 14
Cabinet Wiring Diagram 14
Refrigeration Unit Wiring Diagram 16
Advanced Servicing. 18
Removing the Refrigeration Unit 18
Troubleshooting. 20

1 Installation

Safety First

Always observe safety precautions when using any electrical appliance. Read these instructions carefully and retain them for future reference.

- When the appliance is used by or near young children or infirm persons, close supervision is necessary, especially to ensure children do not play with it.
- Do **not** use this appliance for other than its intended use.
- Do **not** cover the grilles or block the entry or exhaust of airflow by placing objects up against the refrigeration unit.
- Do **not** probe any opening.
- Only use this appliance with the voltage specified on the rating label.
- Ensure the appliance has adequate ventilation as this is essential to economical, high performance.
- Be careful not to touch moving parts and hot surfaces.
- For your own safety and that of others, ensure that all electrical work is done by authorised personnel.
- If the power supply flexible cord becomes damaged, it must be replaced by an authorised service agent or similarly qualified person in order to avoid a hazard.
- Ensure all necessary safety precautions are observed during installation or removal of the refrigeration unit.
- The appliance is not designed to be stable while in motion. Use extreme caution when moving or transporting it.
- Do not store explosive substances such as aerosol cans with a flammable propellant in this appliance.

CAUTION

Never overload the power supply, which could damage the chiller and product. See the rating label inside the cabinet for the safe power supply and current draw.

WARNING

Always disconnect the chiller from the mains power supply before cleaning or maintenance.

Fitting the Legs or Castors

Packed inside the the cabinet is a set of adjustable height legs and a set of adjustable height castors. Either of these sets can be fitted to the cabinet depending on specific height and manoeuvrability requirements. The legs or castors should be fitted to the base of the cabinet before final positioning of the chiller.

Adjustable Legs

The adjustable legs screw into the castor mounting plates attached to the bottom of the cabinet. The adjustable legs can adjust the cabinet height up to 30mm.

To adjust the height of each leg, turn the black plastic foot at the bottom of the leg counter-clockwise to raise the height or clockwise to lower (see Figure 2 below).

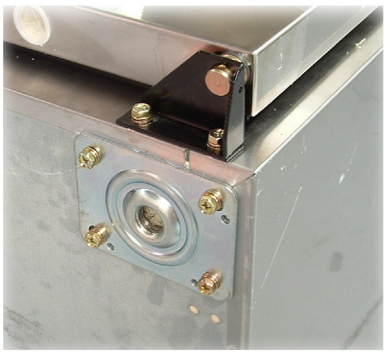


Figure 1: Castor Mounting Plate

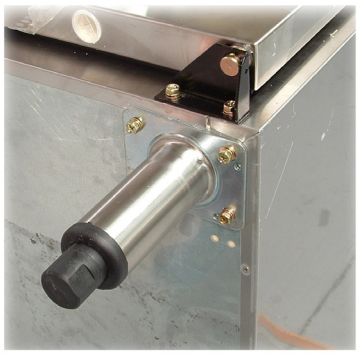


Figure 2: Adjustable Leg

Adjustable Castors

The adjustable castors screw into the castor mounting plates attached to the bottom of the cabinet. The two lockable castors should be fitted to the front of the cabinet (see Figure 3 below) and the non-locking castors fitted to the rear (see Figure 4 below). The adjustable castors can adjust the cabinet height up to 15mm.

To adjust the height of each castor, loosen the lock nut and turn the castor counter-clockwise to raise the height or clockwise to lower. Re-tighten each lock nut after final adjustment has been made.

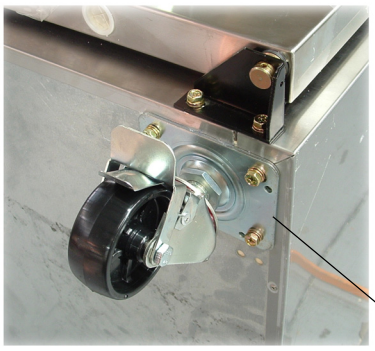


Figure 3:
Lockable Castor (front)

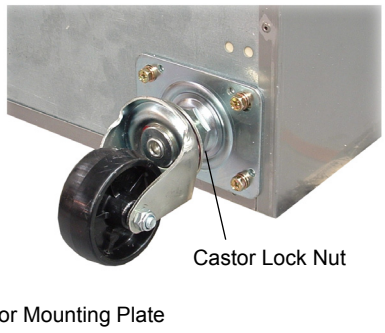


Figure 4:
Non-Locking Castor (rear)

Castor Mounting Plates

If the chiller is intended to be mounted on a plinth, the castor mounting plates attached to the bottom of the cabinet can be removed to provide a flat bottom. Each castor mounting plate is held in place by four pozi-drive hexagon head screws (see Figure 1 above).

Positioning the Cabinet

Location

When positioning the cabinet, avoid direct sunlight and warm draughts etc. The cabinet must NOT be situated where it is affected by warm or hot air from adjacent equipment, as this will compromise the airflow and performance of the chiller.

The cabinet must be positioned on a level surface for the doors to shut and seal correctly, and to prevent the condensate tray from overflowing. Adequate allowance should be made for door opening.

Always ensure that the top of the cabinet is shielded from impact and moisture, with either a SKOPE provided bench top or with a custom or existing bench top.

Ventilation

For efficient operation of the chiller, it is essential that adequate ventilation be provided around the front of the refrigeration unit. Normal operating conditions should not exceed 40°C at 65% RH.

It is critical that the hot refrigeration exhaust air is not restricted and that it can easily flow out and away from the front of the cabinet.

Never store cardboard cartons or other items in front of the refrigeration unit and the ventilation slots in the unit front cover must be kept clear at all times.

When installing the cabinet

- Avoid direct sunlight and warm draughts etc.
- Allow adequate space for the door/s and/or drawer/s to open fully.
- Ensure the cabinet is positioned on a level surface so the door/s shut and seal correctly and to prevent the condensate tray from overflowing.

Power Supply

The chiller is supplied with a 1.8m flexible power cord and plug, which for transit purposes is located inside a compartment in the rear of the cabinet (see Figure 5 below).

Before final positioning of the chiller, pull the power cord out from the rear compartment and connect to the power supply. For convenience, any surplus cord length may be left inside the cabinet compartment.

Once the chiller has been installed it can be disconnected from the mains power supply by turning off the cabinet isolating switch and unplugging the unit supply isolation flex, located inside the refrigeration unit compartment (see Figure 6 below).

Figure 5: Power Cord

Figure 6: Isolating Switch

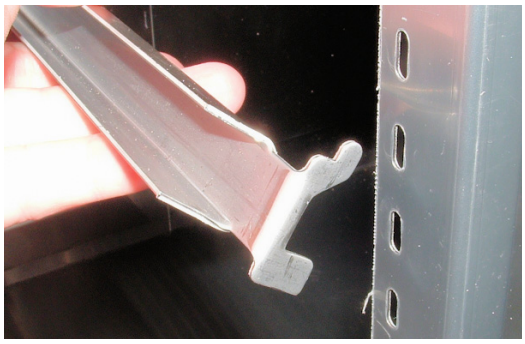
WARNING:
Do **NOT** overload the power supply. See the rating label inside the cabinet for power supply and current draw.

Shelving

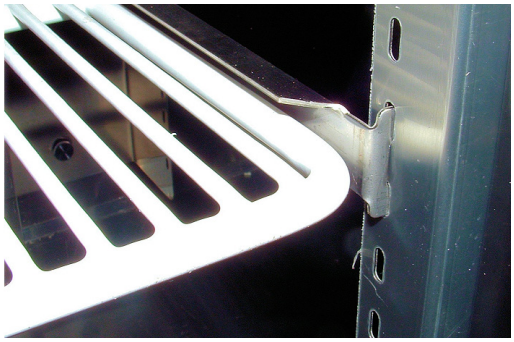
The cabinet is supplied with two sets of shelves and shelf support brackets per door. The shelves can be positioned at different heights to suit various products.

To fit the shelves

1. Unpack the shelving items from inside the cabinet.
2. Establish the desired position for each of the shelves, based on the height of the product intended to go on each shelf.
3. Fit the shelf support brackets into the corresponding slots in both the front and back support rails. Each shelf requires two support brackets.



4. Slide each shelf into the support brackets.



Loading Product

The chiller should be left running for 30 minutes before loading with product. When loading the cabinet shelves with product:

- Allow air space around all the product, to ensure even cooling and efficient operation of the chiller.
- Do not allow products to overhang the front of the shelf as this could prevent the doors from shutting. Leave an airspace of at least 75mm above product loaded on the top shelf.
- Do not exceed a maximum loading of 20kg per shelf.
- Remove some product if the shelves are flexing or bending.

2 Operation

Automatic Start-Up

Connect the cabinet to the mains power supply and check operation of the refrigeration unit, electronic controller and cabinet lighting.

Ensure the cabinet isolating switch, located inside the refrigeration unit compartment, is turned on (see Figure 6 on page 6).

IMPORTANT
If the cabinet has been on its back, leave for 30 minutes before running.

Refrigeration Unit

The compressor, and the condenser and evaporator fans should all operate within two minutes from the time the cabinet is plugged in. This may be verified by listening for compressor switch-on and checking for air movement inside the cabinet. The compressor and condenser fan will switch off when the cabinet internal temperature reaches 2°C.

Electronic Controller

When the cabinet is connected to the power supply, the electronic controller will display the current cabinet temperature. The compressor LED will indicate the compressor is operating and the evaporator fan LED will normally come on within two minutes (see page 9 for controller display).

To ensure efficient operation, the electronic controller forces six hourly defrosts. During the defrost cycle, the compressor and condenser fan switch off and the evaporator fan stays on.

Cabinet Lighting

The interior lighting will go on when a cabinet door or top drawer is opened. The only time that a light should not turn on is either if an LED tube is faulty or the ‘CHt’ high temperature shutdown alarm has been activated (see pages 11 for controller alarms). To replace a LED tube see service instructions on page 12.

HACCP

If Hazard Analysis Critical Control (HACCP) functions are required, to monitor food storage temperature, please contact SKOPE to arrange for an authorised SKOPE service technician to setup the electronic controller.

Electronic Controller

Controller Display

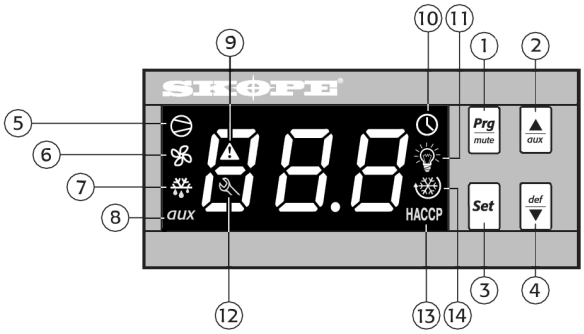


Figure 7:
Controller Display

Item	Icon	Function
1	Prg mute	**Prg / mute:** n.a.
2	▲ aux	**UP / aux:** To scroll settings **UP** (in programme mode).
3	Set	**Set:** If pressed for more than 2 seconds displays and / or enables changing the temperature setpoint (see page 10).
4	def ▼	**DOWN / def:** To scroll settings **DOWN** (in programme mode). Press for more than 5 seconds to initiate manual defrost.
5		**COMPRESSOR:** ON when the compressor and condenser fan starts. Flashes when activation of the compressor is temporarily delayed.
6		**FAN:** ON when the internal cabinet fans are activated. Flashes when activation of the fans is temporarily delayed.
7		**DEFROST:** ON when the defrost is activated. Flashes when the activation of the defrost is temporarily delayed due to procedures in progress.
8	aux	**AUX:** n.a.
9		**ALARM:** Flashes in the event of alarms and when a door is opened.
10		**CLOCK:** n.a.
11		**LIGHT:** n.a.
12		**SERVICE:** Flashes in the event of malfunctions.
13	HACCP	**HACCP:** On if HACCP function is enabled. Flashes if HACCP alarm has occurred.
14		**CONTINUOUS CYCLE:** n.a.

Controller Overview

The CAREL ir33 electronic controller controls and displays the internal cabinet temperature. The preset temperature setting controls the product temperature between 1°C and 4°C. The electronic controller also signals temperature alarms (see page 11).

For general operation, the electronic controller requires no initial setup or additional programming. When the cabinet is connected to the power supply, the electronic controller will display the current cabinet temperature. The compressor LED will indicate the compressor is operating and the evaporator fan LED will normally come on within 2 minutes (see Figure 9 for controller display).

Temperature Setpoint

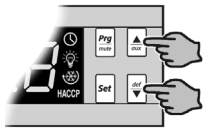
The chiller temperature setpoint is factory set at 2.0°C. If necessary the standard setting can be adjusted between 1.5°C and 3.5°C.

SKOPE do not recommend that the setpoint be changed unless it is absolutely necessary, and then only by small increments at a time.

To view and adjust the temperature setpoint

1. To view the setpoint:
   Press and hold the ***Set*** key for 2 seconds, until the setpoint value flashes.

2. To adjust the setpoint:
   Press either the ▲ aux or def ▼ keys to display the required setpoint value.



3. Press the ***Set*** key again to memorise the new setpoint value. If this is not done within 60 seconds changes will be lost and you will need to repeat the above procedure.

Controller Alarms

Code	Display	Buzzer	Alarm	Action
HI	Flashing	on	Product HIGH temperature alarm (auto reset)	1. Check the cabinet product loading to ensure ventilation slots are not blocked, and that product does not overhang the shelves. Ensure the doors are closed. 2. Ensure the cabinet is installed with good refrigeration unit ventilation. 3. Check and clean the condenser coil (see page 13). 4. If immediate alarm recovery is required - unplug the cabinet from the power supply for 1 minute, then reconnect to power supply. If alarm persists, contact SKOPE. **NOTE:** The 'HI' and 'LO' alarms deactivate the cabinet lighting and trim heaters.
LO	Flashing	on	Product LOW temperature alarm (auto reset)	
cht	Flashing	off	Refrigeration system high temperature pre-warning (auto reset)	1. Clean the condenser coil (see page 13). 2. Check refrigeration ventilation. Ensure clear airpath at the top and front of the cabinet (to extract hot air). A minimum of 200mm clear space is required above and in front of the refrigeration unit. 3. Ensure the cabinet is installed in a suitable environment. 4. To reset the 'CHt' alarm - unplug the cabinet from the power supply for 1 minute, then reconnect to power supply. If alarm persists, contact SKOPE.
CHt	Flashing	on	Refrigeration system and cabinet high temperature shutdown (manual reset)	
E0	Flashing	off	Ambient probe fault (also flashes 'rE')	To reset alarm - unplug the cabinet from the power supply for 1 minute, then reconnect to power supply. 1. If alarm persists, contact SKOPE.
E1	Flashing	off	Evaporator probe fault	
E2	Flashing	off	Condenser probe fault	
Edl	None	off	Defrost over-time limit	
Etc	Flashing	off	Real-time clock fault	
EE	Flashing	off	Controller E prom error	
EF	Flashing	off	Controller E prom error	
dFb	None	-	Start defrost request	None
dFE	None	-	End defrost request	
dor	Flashing	on	Door open alarm	Check that a door or drawer has not been left open. Note: The audible alarm buzzer cannot be turned off manually.

3 Servicing

Lighting

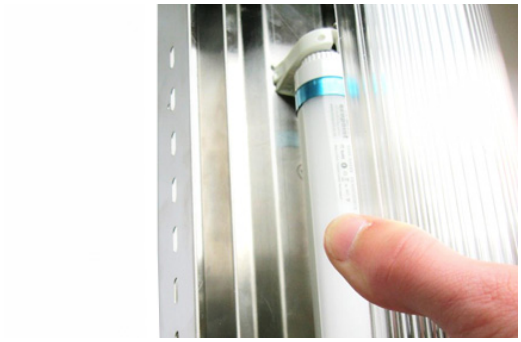
Cabinet Interior Lights

Depending on the model, the cabinet interior is lit by one or two 5 Watt T8 LED tubes, fitted behind the centre pillars. The single door model, without a centre pillar, has the interior interior LED light tube fitted on the ceiling of the cabinet.

To replace the interior LED light tube

1. Open the refrigeration compartment door and isolate the chiller from the power supply by switching off the mains isolation switch.

2. Remove the diffuser by squeezing it until it is released from the housing, and then push the diffuser out of the way (multiple door cabinet pictured for clarity).



3. Rotate the LED tube until the pins on the ends of the tube align with the slots, then slide it out. **Note:** access can be made easier by removing the shelves.

4. Fit a new LED tube and clip the diffuser back into place

Cleaning

Cabinet

When necessary, wipe both the interior and exterior of the cabinet with a damp cloth. Ensure the cabinet is disconnected from the mains power supply before cleaning the cabinet.

CAUTION

Disconnect the cabinet from the mains power supply before cleaning the condenser coil or washing the cabinet with water.

Condenser Coil

The condenser coil should be brushed clean once a month and blown clean by qualified service personnel, every six months. Over time, dust may accumulate within the condenser that cannot be removed with a brush. If this occurs, contact SKOPE to arrange for a SKOPE authorised service agent to clean the condenser with compressed air. The condenser coil is located inside the refrigeration unit compartment and is accessed by opening the unit front cover.

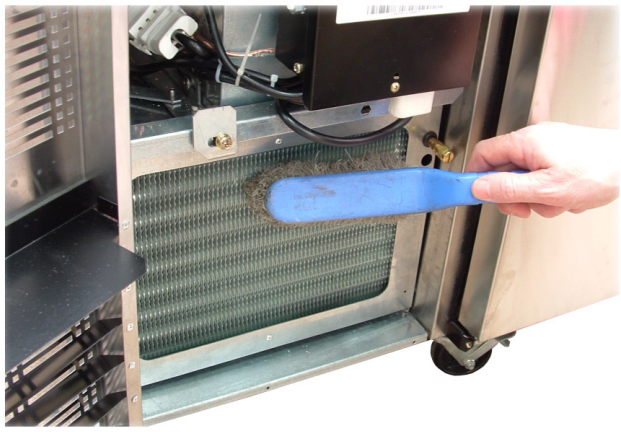


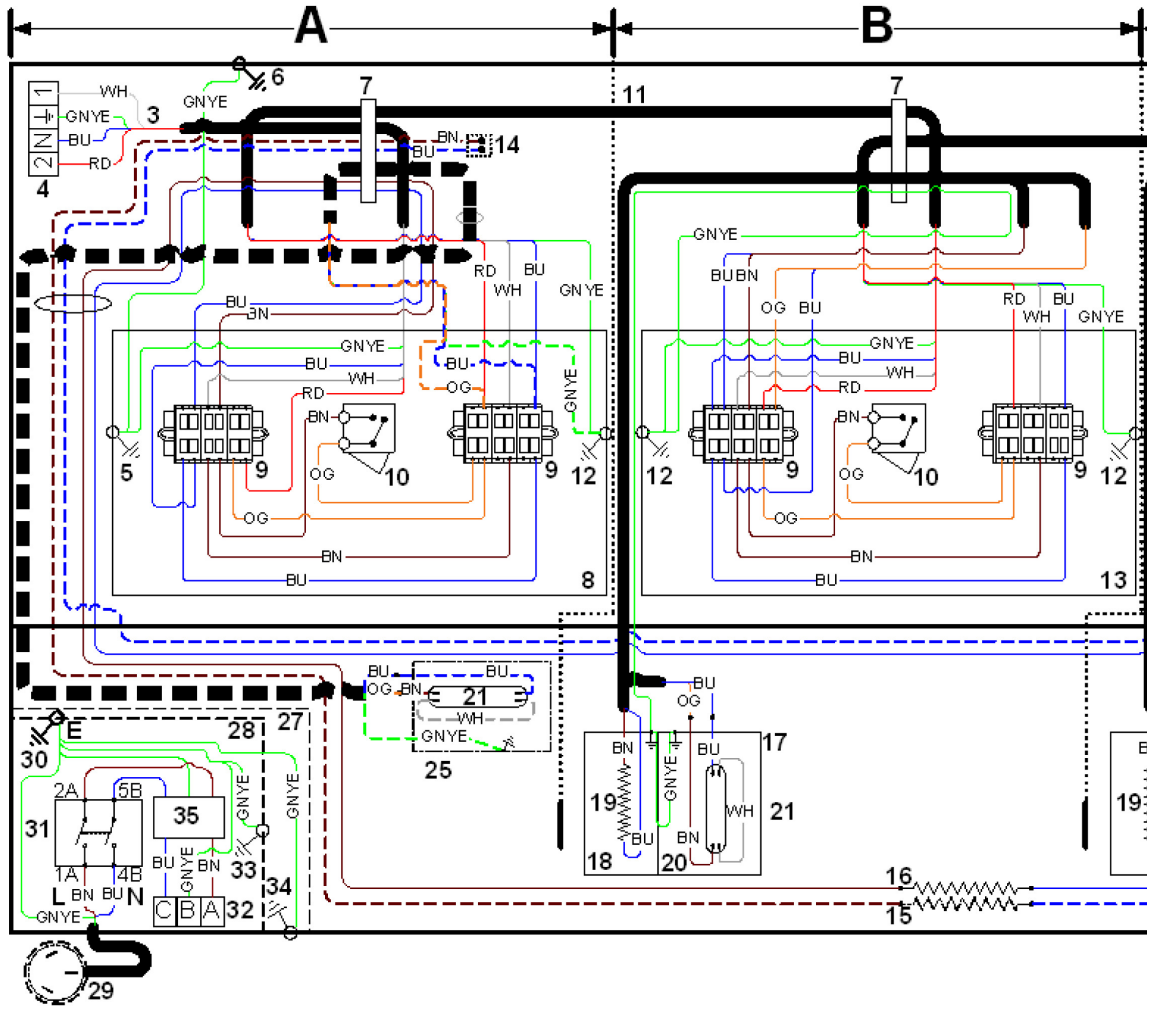
Figure 8:
Condenser Coil

IMPORTANT

If the electronic controller display flashes '**cht**' the condenser coil must be cleaned immediately.

Wiring

Cabinet Wiring Diagram

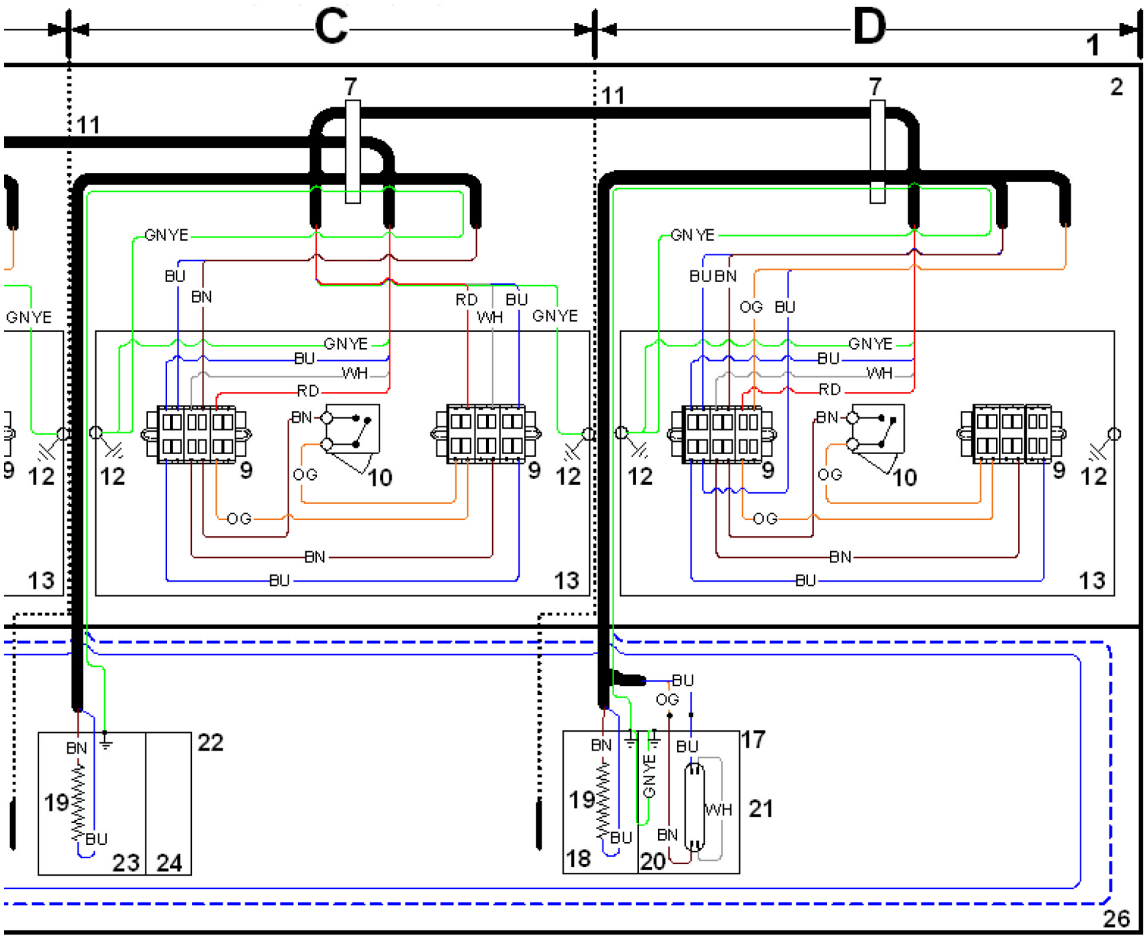


Cabinet Wiring Component Key

Item	Description	Item	Description
1	Foamed cabinet	10	Single pole door activated switch
2	Cabinet stepped front top	11	4-Core link flex
3	Cabinet supply flex with 4-Pole ENSTO plug	12	Link flex earth connections
4	4-Pole ENSTO plug*	13	Cabinet wiring switched extension tray
5	Cabinet supply flex earth connection	14	Spare cabinet fascia heater wire supply wires (if available)
6	Main cabinet chassis earth connection	15	Spare cabinet fascia heater wire (not connected, if available)
7	Flex tie (to guide wires & flexes on stepped cabinet front top)	16	Cabinet fascia heater wire (chiller, otherwise freezer)
8	Cabinet wiring switched supply tray	17	Heated lit centre pillar assembly
9	3-Pole screwless connector block	18	Heated lit centre pillar fascia assembly

Wiring Key

Cabinet Model	Portions of Wiring Diagram	Single Door Roof Mount Light Assembly (item 25)
1-Door	Portion A	Included
2-Door	Portions A & D	Excluded
3-Door	Portions A, B & D	Excluded
4-Door	Portions A, B, C & D	Excluded



Cabinet Wiring Component Key (continued)

Item	Description	Item	Description
19	Centre pillar fascia heater wire (chiller, otherwise freezer)	28	Mains isolation box assembly (**NOT on remote cabinets)
20	Heated lit centre pillar back assembly	29	Mains supply flex (with 3-Pin plug fitted)
21	LED tube cabinet light (5W)	30	Mains supply earth connection
22	Heated centre pillar assembly (no light)	31	2-Pole isolation switch
23	Heated centre pillar fascia assembly	32	3-Pole BLUE panel mount ENSTO socket - isolation socket
24	Heated centre pillar back assembly	33	Mains isolation box cover earth connection
25	Single door cabinet roof mounted light assembly	34	Refrigeration unit enclosure earth connection
26	Cabinet fascia	35	Schaffer EMI filter
27	Refrigeration unit enclosure		

Wire Colour Key

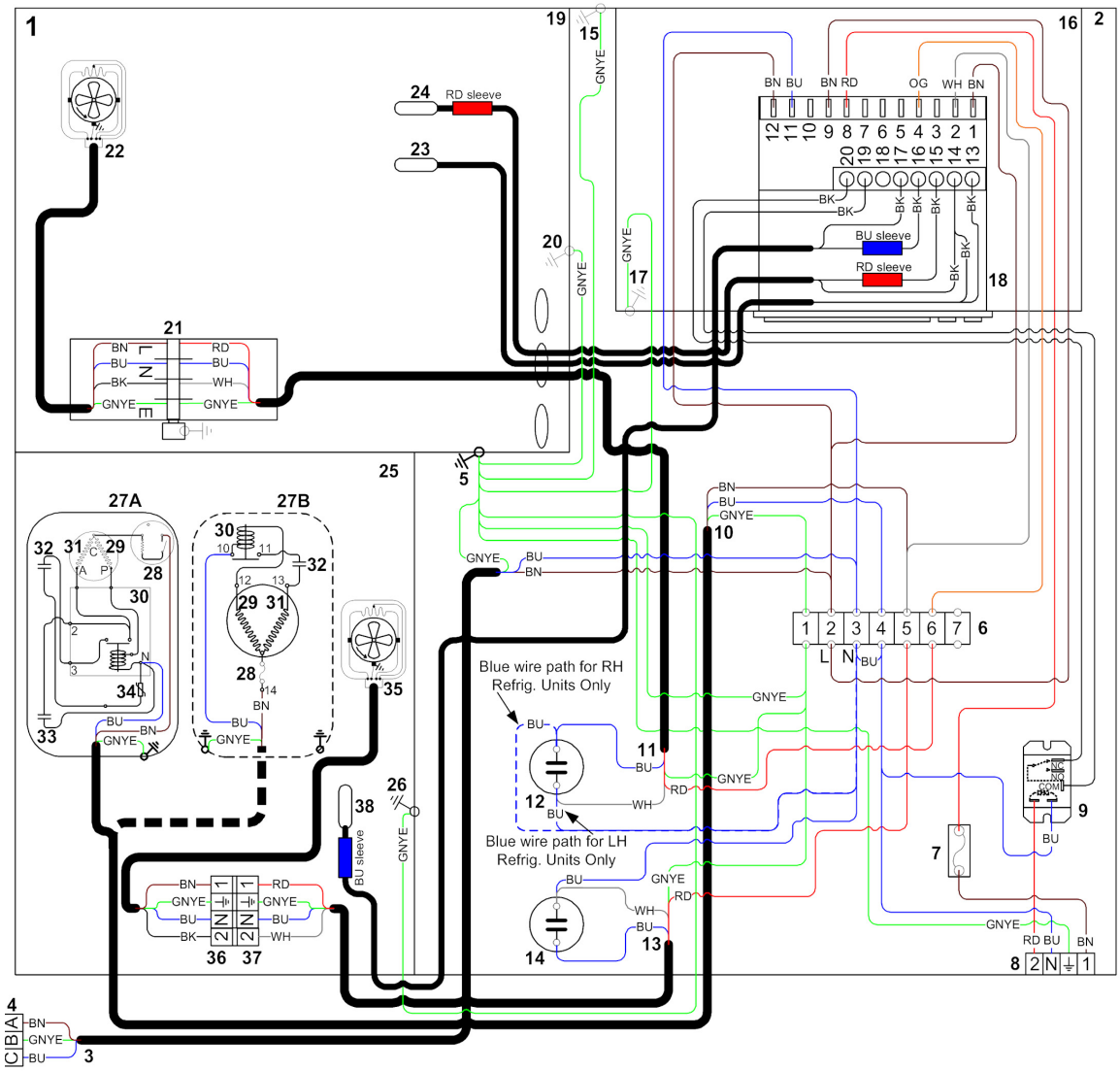
BK	Black	BU	Blue
BN	Brown	GY	Grey
RD	Red	WH	White
OG	Orange	GNYE	Green-Yellow
GN	Green	Based upon IEC 757 Standard	

* For refrigeration unit wiring details, refer to 'Refrigeration Unit Wiring Diagram' on the following pages.

** For remote refrigerators, the mains isolation box assembly is part of the refrigeration unit assembly.

Refrigeration Unit Wiring Diagram

Models: UE50/60ACD



Wire Colour Key

BK	Black	BU	Blue
BN	Brown	GY	Grey
RD	Red	WH	White
OG	Orange	GNYE	Green-Yellow
GN	Green	Based upon IEC 757 Standard	

Refrigeration Unit Wiring Component Key

Models: UE50/60ACD

Item	Description	Item	Description
1	Refrigeration Unit Assembly	21	Terminal Box (for evaporator fan flex extension)
2	Unit Wiring Junction Box	22	Evaporator Fan (CW rotation LE*)
3	Refrigeration Unit Supply Isolation Flex (with 3-Pole Blue ENSTO plug fitted)	23	Cabinet Ambient Temperature Probe (1.5m)
4	3-Pole Blue Free ENSTO Plug	24	Evaporator Coil Temperature Probe (1.5m with red sleeve)
5	Refrigeration Unit Supply Isolation Flex Earth Connection	25	Condenser Assembly
6	7-Pole Terminal Block	26	Condenser Assembly Earth Connection
7	Cabinet Supply Fuse (3A)	27	Compressor (used in UE50ACD unit only)
8	4-Pole Panel Mount ENSTO Socket (cabinet supply) **	28A	Compressor (used in UE60ACD unit only)
9	Relay (HONGFA)	28B	Winding Protector / Compressor Thermal Overload (external for UE50ACD unit, internal for UE60ACD unit)
10	3-Core Compressor Supply Flex	29	Compressor Main Winding
11	Evaporator Fan 4-Core Extension Flex	30	Compressor Start Relay
12	Evaporator Fan Capacitor	31	Compressor Start Winding
13	Condenser Fan 4-Core Extension Flex (with 4-pole ENSTO socket fitted)	32	Compressor Start Capacitor
14	Condenser Fan Capacitor	33	Compressor Run Capacitor (UE50ACD unit only)
15	Unit Wiring Junction Box Cover Earth Connection	34	Compressor NTC (UE50ACD only)
16	Electronic Controller Enclosure Assembly	35	Condenser Fan (fitted with 4-pole ENSTO plug - CW rotation LE*)
17	Electronic Controller Enclosure Earth Connection	36	4-Pole Free ENSTO Plug
18	Programmed Electronic Controller	37	4-Pole Free ENSTO Socket
19	Evaporator Box Assembly	38	Condenser Coil Temperature Probe (1.5m with blue sleeve)
20	Evaporator Box Exterior Earth Connection		

*LE denotes the motor direction as viewed from the lead end.
**For refrigeration cabinet wiring details, refer to ‘Cabinet Wiring Diagram’ on the previous pages.

Advanced Servicing

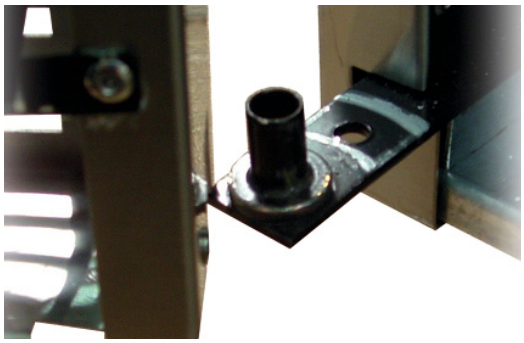
Servicing should be carried out by an authorised service agent. Detailed service and spares information is available in the SKOPE Pegasus Service Manual (MAN6787S) and detailed technical information on the SKOPE ir33 Controller can be found in the SKOPE Pegasus Technicians Manual (MAN3224).

Removing the Refrigeration Unit

For ease of servicing, the entire refrigeration unit can be removed from the cabinet.

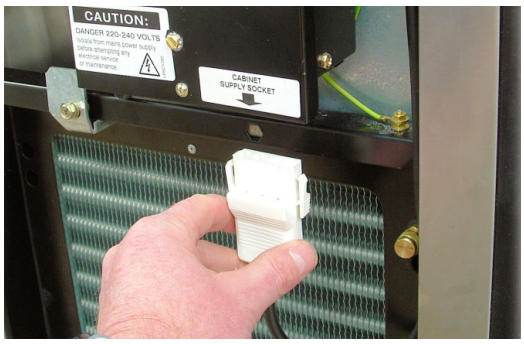
To remove the refrigeration unit

1. Open the unit cover. Remove the cover from the cabinet by lifting the bottom corner of the cover off the bottom hinge pin..



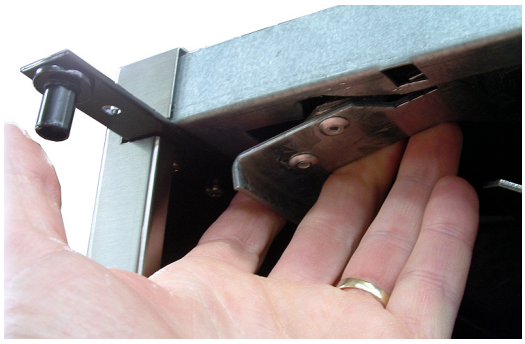
2. Switch off the cabinet isolating switch and unplug the blue power supply plug from underneath the isolating socket box.

3. Disconnect the cabinet supply plug from underneath the wiring junction box on the front of the refrigeration unit.

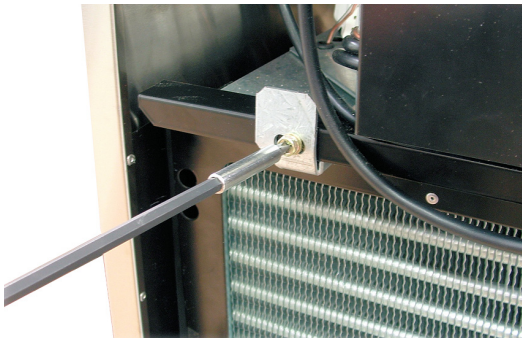


4. Remove the top clamp screw from the clamp mechanism on top of the unit.

5. Pull the top clamp mechanism fully forward, into the relocation position on the front flange of the cabinet (this keeps the mechanism up out of the way).



6. Remove the bottom clamp screw from the front of the refrigeration unit.



7. Pull the bottom clamp lever forward, while applying adequate force to the right hand side of the wiring junction box to disengage the unit from the cabinet wall (the unit will need to move over approx. 60mm).

8. Carefully pull the refrigeration unit out from the unit compartment.

   IMPORTANT: When refitting the refrigeration unit, refit the bottom clamp screw first before fitting the top clamp screw and prior to refitting, ensure that all seals are in good condition.

Troubleshooting

Complaint	Possible Cause	Repair
1. Cabinet not operating and no controller display:	• Loss of power supply.	• Check mains power supply. • Check that the cabinet isolating switch is turned on (see page 6).
2. Cabinet lights not operating:	• Failed LED light tube. • Controller high temperature shutdown alarm 'CHt'. • Cabinet ENSTO supply plug not plugged into control box.	• Replace LED light tube (see page 12). • Determine cause and eliminate (see pages 11). • Reconnect plug (see page 18).
3. Power consumption is higher than expected:	• Unit operating too hot. • Cabinet doors are opened excessively.	• Clean condenser. Ensure the chiller is installed with good ventilation around the refrigeration unit. • Keep door/s open for minimum time.
4. Product is too warm and spoiling:	• Restricted cabinet airflow. • Temperature setpoint is too warm.	• Ensure product is not blocking airflow slots and the product is no closer than 75mm from the cabinet top. • Adjust setpoint (see page 10).
5. Warm cabinet temperatures and/or compressor operating for long periods (more than 1 hour):	• Blocked condenser. • Poor refrigeration unit ventilation.	• Clean condenser (see page 13). • Ensure the cabinet is installed with good ventilation around the refrigeration unit (see page 6).

SKOPE Contacts

SKOPE INDUSTRIES LIMITED

NEW ZEALAND CONTACT
Head Office
PO Box 1091, Christchurch
New Zealand
Freephone: 0800 947 5673
Fax: (03) 983 3896
E-mail: enquiry@skope.co.nz
Website: www.skope.co.nz

AUSTRALIAN CONTACT
A.B.N. 73 374 418 306
PO Box 7543, Baulkham Hills B.C.
NSW 2153, Australia
Freephone: 1800 121 535
Fax: 1800 121 533
E-mail: enquiry@skope.com.au
Website: www.skope.com.au